



Preliminary Ignition Investigation Report

Ignition Database Index:	973
Electric Incident Investigation (EII) Number:	N/A
HAWC Incident Name:	N/A
PG&E Facility Ignition?	Y
CPUC Reportable Ignition?	Y
Date & Time of Incident:	June 24, 2022 at approximately 1801 hours
Street Address:	Near Redwood Highway 101 and Henry Station Road
City:	Hopland
County:	Mendocino
Latitude/Longitude:	
PG&E Division:	North Coast
High Fire Threat District (HFTD):	Non-HFTD
Fire Index Area:	154
Fire Potential Index (FPI) Rating:	R3
Was there a PSPS event at the time of ignition?	N
Failure Driver:	All Types of Equipment/Facility Failure
Failure Sub-driver:	Other
Circuit:	Ukiah 1114, 04277-1114
Circuit Protection Zone:	Ukiah 1114 LR528
Nominal Voltage:	12kV
PG&E Equipment associated with ignition:	Jumper, pole SAP ID 102192499
EPSS enabled at time of ignition?	Y
Fault Type:	N/A – no ILIS
Wire Down (Primary)?	N
MAVF Score	2354.24
Lead Agency/Agency Having Jurisdiction:	CAL FIRE
Fire Size:	Approximately 10' x 10'
FAS Field Remarks:	Burned open jumper on field side Kyle switch. Started small fire at base of pole 10x10
HAWC Summary:	N/A
Injuries / Fatalities / Property Damage / Media Attention:	No Injuries/Fatalities/Property Damage/Media Attention
Weather Conditions:	92.3F. Wind speed at 8.3 MPH with gusts up to 15.1 MPH.
Red Flag Warning (RFW) / High Wind Warning (HWW):	No RFW/HWW
911 Standby Relief Time:	27 minutes
OIS #:	TR562009
ILIS #:	N/A

FAS #:	T005663312
Assigned Attorney:	N/A
EII Ignition Investigator & Phone:	

Executive Summary

On June 24, 2022 at approximately 1801 hours, PG&E was notified of a small fire at the base of a pole near Redwood Highway 101 and Henry Station Road in the City of Hopland. The ignition occurred on the Ukiah 1114 12kV distribution circuit (see Figure 1) in a Non-High Fire Threat District (HFTD) during R3 conditions. PG&E's Enhanced Powerline Safety Settings (EPSS) were already enabled for this circuit a few weeks prior to the time of the incident.

Meteorology data pulled from the MesoWest weather observation site that was approximately 5.07 miles southeast of the incident location indicates a warm day at 92.3F with a relative humidity of 19%. Winds registered 8.3 Miles Per Hour (MPH) out of the west northwest with gusts up to 15.1 MPH at the approximate time of the incident. There were no Red Flag or High Wind Warnings in effect nor did this ignition occur during a Public Safety Power Shutoff (PSPS) event.

A troubleman was the PG&E first responder who arrived on scene at approximately 1808 hours. Per CAL FIRE the incident pole SAP ID 102192499 was seen arcing. The troubleman was able to observe minor but visible fire damage to the surrounding grass and to the base of pole (see Figure 2 and 3). The troubleman opened all three fuses to de-energize the lines and reported that the #3 jumper on the field-side Kyle located on capacitor bank 464 (SAP ID 40139159) was burnt opened. Initial analysis indicates a possible bad connection of the jumper that led to the ignition.

No new corrective work or tags were created from this incident. However, additional notes by the troubleman were added to a pre-existing Critical Operating Equipment (COE) tag (#122886028) to keep all three fuses opened and the capacitor bank offline until repair.

A corrective history search of COE tag (#122886028) shows a pending priority "B" notification created on January 26, 2022, to repair the capacitor bank with an original due date of June 1, 2022. Notes within the COE tag indicates all three Kyles were left on manual since the road-phase Kyle would not open. The capacitor bank would need to be investigated, tested and repaired if necessary. There were no reasons provided as to why the current status is "put on hold work" (POHW) or why the tag was not addressed prior to this incident on June 24, 2022. A deeper dive into the history shows that the capacitor bank underwent similar issues and was repaired on November 29, 2021, through a COE tag (#120573280) that was created on February 24, 2021. Repairs were made to the Kyles, control and radio antenna. A request has been made to have the capacitor bank retained during repairs so that it can be sent to Applied Technology Services (ATS) for failure analysis.

A corrective history search of the incident pole shows a pending priority "E" Electric Corrective (EC) tag. EC tag (#117162914) was created on May 5, 2019, to replace both the decaying/rotten pole and crossarm. The tag originally had a due date of May 5, 2020 but multiple Field Safety Review (FSR) pushed the due date to July 22, 2022. Reasons provided in the FSR were that the notification was not part of the 2020 and 2021 work execution plan for Tier 2/3 (this incident occurred in a non-HFTD).

The incident pole is made from a Douglas Fir and was originally installed in 1945. A search of company records did not locate any Wildfire Safety Inspection Program (WSIP) inspection records for this pole. In accordance with electric compliance (GO165 Compliance), the pole was most recently inspected on July 21, 2021. The GO165 Compliance inspection reported a rotten pole (see Figure 4) but no vegetation issues or additional compelling abnormal conditions.

EPSS Analysis

The EPSS Engineering Team confirmed EPSS was enabled for the Ukiah 1114 circuit and the automatic devices on the circuit since June 9, 2022. Per engineering, the upstream protective device LR 528 did not register any fault at the time of the incident and did not operate. The active protection profile for the upstream device was set at "Alternate 3" with a timed delay setting of 15 seconds for a threshold of 15 amps. Indications would be that the fault was below the threshold (high impedance) and was not sustained long enough to allow the opportunity for the device to operate.

Ukiah 1114 – Electronic Protective Device Settings

Simplified Setup

Operations Sequence

TCC1	TCC2	Min Trip	Trip #1	Trip #2	Trip #3	Trip #4
Ph 101	133	340	TCC2	TCC2	TCC2	TCC2
Ph Rels Interval #1, #2, #3	25	15	15			
Gd 102	165	100	TCC2	TCC2	TCC2	TCC2
Gd Rels Interval #1, #2, #3	25	15	15			
Trips to Lockout	1					
Reset Time	45					

Complex TCC

TCC1	Time Multiplier	Time Adder	Min Rsp Time
Ph	1	0	0.01
Gd	1	0	0.01
TCC2	1	0	0.01
Gd	1	0	0.01

High Current Trip

TCC1	HCT	Min Trip	Time Delay
Ph	1	0.01	0.01
Gd	1	0.01	0.01
TCC2	1	0.02	0.02
Gd	1	0.02	0.02

Cold Load Pickup

TCC	Min Trip	Time Mult.	Time Adder	Min Rsp Time
Ph	133	240	1	0.013
Gd	165	60	1	0.013
Block	Ops to LJO	1		
Rels Intvl	10			
Actv Time	600			

System Configuration, PT/Bushing Connections

Description: NOVA r30 12kV 528

Connected... ☒ A/B ☒ B/C ☒ C/A

PT Ratio (x1) 2200 2200 2200

Adjust (deg) 6.4 6.4 6.4

V expected 6,928 1-2 3-4 5-6

CT Type 1Amp Wye-Connected PT's

CTR (1A) 1000 A-C-B Phase Sequence

CTR (5A) 1200 Disable Phantom Phase

☒ Pole Mounted System Frequency 60

High Current Lockout

Pickup	Trip #1	Trip #2	Trip #3
Ph 6000	1	1	1
Gd 3600	1	1	1

Reclose Retry

☐ Enable Interval 60 # of Attempts 1

Interrupter Duty

100% Duty Factor Preset Ph A% Ph B% Ph C%

1111 (kA*10^5)

Sensitive Earth Fault

Edit Group Alternate 3 Change Setting Group

Sensitive Earth

Minimum Trip 15 Amps

Time Delay 15 Seconds

Reclose Interval 10 Seconds

Operations to Lockout 1

☐ Block Sensitive Earth Fault Tripping

SEF Minimum Trip (A pri), MIN = .5, MAX = 100

ALT 3 or EPSS was enabled for the device on 6/9/22

- EPSS was activated for the circuit and automatic devices on the circuit on since 6/9/22.
- A burned open jumper started a small fire at the base of the pole with Cap Bank 464.
- Upstream protective device LR 528 didn't register any target for the event.
- Outage didn't affect the mainline.

Ignition Impact

This ignition on June 24, 2022, resulted in a small grass fire that was approximately 10' x 10' in size. There appears to be no associated outage or customers affected from this incident. PG&E is not aware of any injuries, fatalities, property damage or media attention connected to this event.

Sequence of Events

February 24, 2021

- 1154 Hours: Troubleman reports capacitor bank in manual with Kyles opened and fuses closed. COE tag (#120573280) created to replace capacitor bank.

November 29, 2021

- 1223 Hours: Reported that COE tag (#120573280) was completed. Repairs made to Kyles, control and radio antenna.

January 26, 2022

- 1240 Hours: Troubleman reports road-side Kyle will not open. COE tag (#122886028) created for capacitor bank repair with a due date of June 1, 2022. All three Kyles were closed and unit was left on manual.

June 24, 2022 (Date of Incident)

- 1801 Hours: Troubleman dispatched.
- 1802 Hours: CAL FIRE notifies PG&E there is arcing from pole.
- 1808 Hours: Troubleman arrived onsite.
- 1815 Hours: Troubleman opened all three fuses.
- 1820 Hours: Troubleman reports #3 jumper burned opened and added notes to existing COE tag (#122886028) to keep all 3 fuses opened and capacitor bank offline until repair.

Corrective Notification Associated with Ignition

A search of company records did not locate any new corrective notifications created from this incident. However, notes were added to a pre-existing COE tag (#122886028) that was created on January 26, 2022, to repair the capacitor bank.

Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	117162914	Replacement of rotten pole and crossarm.	E	May 5, 2019	May 5, 2020
COE Notification	122886028	Repair of capacitor bank.	B	January 26, 2022	June 1, 2022
LC Notification	N/A				
Veg Work Order	N/A				

Please note this may not include pending major program or project work at the incident location.

Asset Info & Most Recent Inspections and Tests

Info / Inspection	Most Recent Date	Findings
Install Date:	January 1, 1945	40-foot, Douglas Fir, Class 3
Inspection:	July 21, 2021	GO165 Inspection shows decay of pole. Otherwise, there are no vegetation issues or additional abnormal conditions to

		report. Also noted is pending EC tag #117162914 to have pole and crossarm replaced.
	B	
Patrol:	N/A	
Corrective History:	May 5, 2019	A priority "E" EC tag (#117162914) created to replace both the pole and crossarm(both are rotten/decaying). Original due date is May 5, 2020. Tag is still pending. Tag was expedited to be completed before the 2021 fire season. However, a FSR note on November 19, 2020 indicates that the notification was not in the 2020 work execution plan for Tier 2/3. An FSR on July 21, 2021 provided a new due date of July 22, 2022 as the notification was not in the 2021 work execution plan.
	January 26, 2022	A priority "B" COE tag (#122886028) created to repair the capacitor bank. Original due date is June 1, 2022. Tag is still pending. No reasons provided for delay/postponement.
Aerial Inspection Records:	March 1, 2020	Aerial inspection of pole SAP ID 102192499. Taken from Sharper Shape (see Figure 5).
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	April 25, 2013	Pole detail report indicates passing results with the following conditions: Fair pole top and pole bottom condition with wood strength testing at 100%.
WSIP Inspection:	N/A	

*Incident Location: Near pole SAP ID 102192499


Hazard Barrier Analysis:

Hazard	Opened Jumper				
Target	PG&E Asset Failure				
Barrier	Objective	Expected Performance	Did Barrier Perform as Expected	Did Barrier Contribute to Incident	Defect
Patrol & Inspection (P&I) Records	Identify any nonconformances with poles or lines.	Inspection or patrol would identify any issues with PG&E equipment.	Yes Rotten pole was identified for replacement with an original due date of May 5, 2020.	Yes	Replacement of the pole would also replace or allow review/inspection of attached equipment including capacitor bank.
Wildfire Safety Inspection Program (WSIP) Inspections in high fire threat districts (HFTD)	Identify any nonconformances with structures in HFTD	Inspection would identify any issue with PG&E equipment.	N/A	N/A	N/A
Enhanced Powerline Safety Settings (EPSS)	De-energize sections of the distribution grid when a fault is experienced to make the line safe.	De-energize sections of the distribution grid until restored after visual inspection.	Yes EPSS is enabled for the circuit and its automatic devices but was not given the opportunity to operate based on the settings programmed.	Yes	EPSS has known limitation that does not detect high impedance faults.

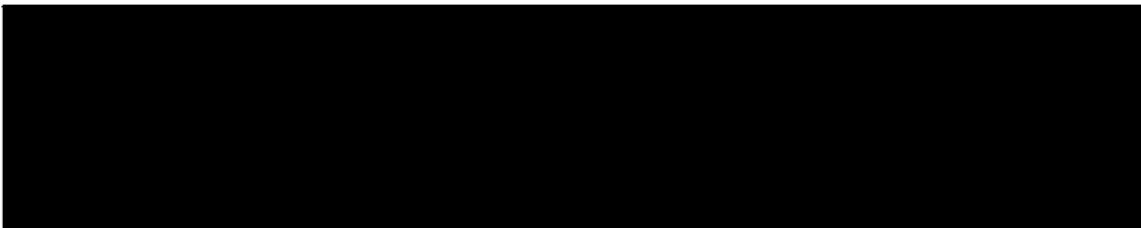
Potential Next Steps / Associated CAP Items:

- Exploring available relaying technologies capable of detecting high impedance faults.
- Requesting the capacitor bank to be retained and sent to ATS for failure analysis.
- CAP filed under Issue Number 000124112167: Review of the COE tag process.

Single Line Diagram

LEGEND				
	Substation		Fuse	
			Line Recloser	
				Area of Interest

Device ID	Brand	Type
1114/2	SEL351/F60	IPAC
Recloser 544	Cooper	Form 6 – Rev 30
Recloser 911132	Viper	Beckwith
Recloser 628	Cooper	Form 6 – Rev 30



Photos and Diagrams of Events

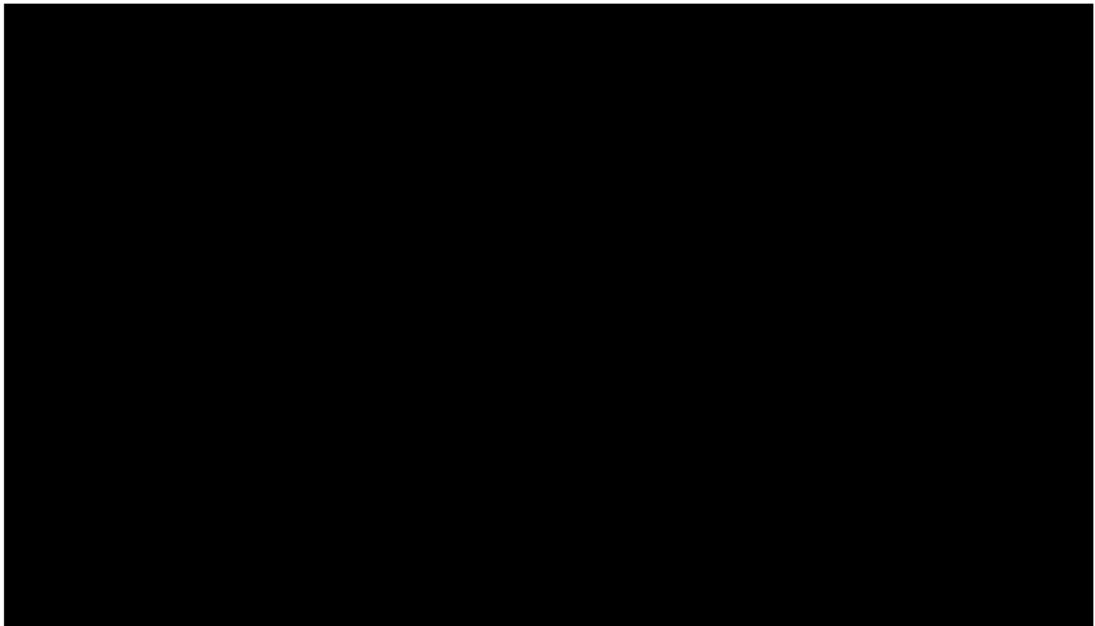


Figure 1 – EDGIS diagram of Ukiah 1114 12kV. Fire was located at the base of the pole.



Figure 2 – Photos of burn mark at the base of pole SAP ID 102192499. Taken by the troubleman.

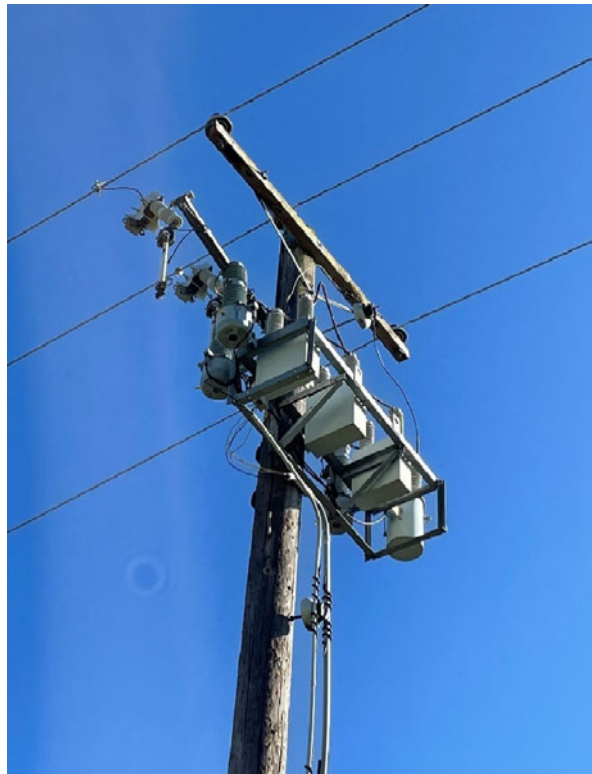


Figure 3 – Top view of pole SAP ID 102192499 during date of the incident. Taken by the troubleman.



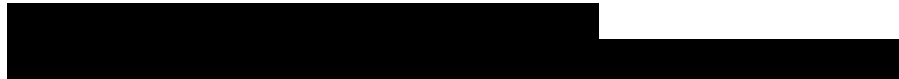
Figure 4 – Photos of pole SAP ID 102192499 on July 21, 2021. Taken from GO165 Inspection.



Figure 5 – Aerial view of pole SAP ID 102192499 (left) and close-up photo of hollowed out pole top due to rot (right) on March 1, 2020. Taken from Sharper Shape.

Attachments

Attachments and references can be located in the ESA folder, located below:



-----END of REPORT-----